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International Journal for Modern Trends in Science and Technology
Volume 11, Issue 06, pages 01-04.
ISSN: 2455-3778 online
Available online at: http://www.ijmtst.com/vol11issue06.html
DOI: https://doi.org/10.5281/zenodo.15581384

The Big Five Factors and Facial Recognition: An Exploratory Study

Shruti Debnath*, Rupam Banerjee, Debashina Das, Dr. Anwesha Chakrabarti

Department of Psychology, Sarojini Naidu College for Women, Kolkata, India.
*shrutidebnath2003@gmail.com

To Cite this Article
Shruti Debnath, Rupam Banerjee, Debashina Das & Dr. Anwesha Chakrabarti (2025). The Big Five Factors and Facial Recognition: An Exploratory Study. International Journal for Modern Trends in Science and Technology, 11(06), 01-04. https://doi.org/10.5281/zenodo.15581384

Article Info
Received: 13 May 2025; Accepted: 30 May 2025.; Published: 02 June 2025.

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KEYWORDS

Face Recognition, Personality Traits, Big Five, Visual Memory, NEO-FFI.

ABSTRACT

Facial recognition is a key social and cognitive ability that allows individuals to identify and remember faces. While cognitive models explain the processes involved, they often overlook why some individuals perform better than others. Personality traits, particularly those from the Big Five model, have been proposed as possible correlates. This study aimed to explore the relationship between the Big Five personality traits and facial recognition ability among female college students. A sample of 31 female graduate and postgraduate students completed the Face Recognition Subtest of the Wechsler Memory Scale–Third Edition (WMS-III) and the NEO Five-Factor Inventory (NEO-FFI). Data were analysed using descriptive statistics, normality tests, and Pearson's correlation to examine associations between personality traits and face recognition scores. Descriptive analyses showed moderate variability in both personality traits and facial recognition scores. However, no significant correlations were found between face recognition ability and any of the Big Five traits. While slight positive trends emerged for Extraversion and Agreeableness, they did not reach statistical significance. The findings suggest that Big Five personality traits may not significantly influence facial recognition ability in this sample. These results highlight the potential role of other factors—such as cognitive or perceptual processes—rather than personality alone, in explaining individual differences in facial recognition.

I. INTRODUCTION

Facial recognition is more than a memory task—it is a deeply social and emotional skill, essential for navigating human relationships. As Bruce and Young proposed, recognizing a face involves multiple cognitive processes, including perception, encoding, and retrieval [1]. But while cognitive models explain how we recognize faces, they often overlook why individual

differences exist in this ability. One explanation has been through **personality traits**. According to McCrae and Costa's (1999) Five-Factor Theory, personality reflects stable patterns of thinking, feeling, and behaving that influence many aspects of life—including cognitive performance [2]. Traits like **Extraversion** and **Neuroticism**, in particular, have been linked to social attention and emotional processing. For instance, extraverts tend to show heightened sensitivity to social cues, while neurotic individuals often exhibit stronger emotional reactivity [3,4,5].

Although some studies have explored the link between personality and memory, research specifically connecting personality traits to **facial recognition ability** is still limited. Hall et al. found that individuals high in interpersonal sensitivity—a trait linked to Extraversion and Agreeableness—are better at decoding nonverbal cues [6], suggesting that personality may indeed shape how we perceive and remember faces.

STRUCTURE OF PAPER

The paper is organized as follows: In Section 1, the introduction of the paper is provided along with the structure, important terms, objectives and overall description. In Section 2 we discuss about methodology. In Section 3 we have the complete information about tools used. Section 4 shares information about procedure. Section 5 tells us about the statistical analysis. Section 6 tells us about result. Section 7 is all about discussion and concludes the paper with conclusion and references.

OBJECTIVES

The relationship between cognitive abilities and personality traits has been a topic of ongoing research, yet little attention has been given to how these factors interact in real-world perceptual tasks such as face recognition. Among female college students, both personality traits and cognitive abilities like face recognition show individual variability, but their interrelation remains unclear.

This study aims to explore the association between face recognition ability and the Big Five personality traits among female college students. The objective is to understand whether personality dimensions play a role in cognitive-perceptual performance and to contribute to the limited literature in this domain.

II. METHODOLOGY

Sampling Technique: Purposive sampling was done.

Participants: Graduate and postgraduate female students from Sarojini Naidu College for Women participated in the study (N = 31, Mean Age =22.57). Participants with diagnosed medical or psychological conditions and previous exposure to the tests were excluded from the study.

III. TOOLS USED:

1. Face Recognition Subtest – Wechsler Memory Scale – Third Edition (WMS-III)

The **Face Recognition subtest** of the **Wechsler Memory Scale – Third Edition (WMS-III)** (Wechsler, 1997) is designed to assess visual memory, specifically the ability to recognize previously seen human faces. During the test, participants are first shown a series of faces during the learning phase. After a brief delay, they are then presented with a larger set of faces, including distractors, and are asked to identify which faces they had seen earlier. This test taps into **nonverbal memory processes** and **episodic recognition abilities**, making it especially useful for understanding face-specific perceptual and memory functions.

The WMS-III has been widely used in neuropsychological research and clinical practice and is considered a reliable and valid measure of memory functioning, including facial memory (Tulsky et al., 2003). In the context of this study, the subtest serves as an indicator of individual differences in face recognition ability, which may relate to underlying personality traits.

2. NEO Five-Factor Inventory (NEO-FFI)

The **NEO Five-Factor Inventory (NEO-FFI)** (Costa & McCrae, 1992) is a **60-item** self-report questionnaire designed to measure the five major domains of personality as proposed by the Five-Factor Model (FFM):

- **Neuroticism (N)**: emotional instability and vulnerability to stress,
- **Extraversion (E)**: sociability, assertiveness, and positive emotionality,
  Openness to Experience (O): imagination, creativity, and openness to new ideas,
- **Agreeableness (A)**: compassion, cooperativeness, and trust in others,
- **Conscientiousness (C)**:organization, responsibility, and dependability.

Participants rate their level of agreement with each statement on a **5-point Likert scale**, ranging from "Strongly Disagree" to "Strongly Agree." The NEO-FFI has demonstrated **robust psychometric properties**, including good internal consistency, test-retest reliability, and construct validity (McCrae & Costa, 2004). It is widely used in both academic research and applied settings and is considered a reliable measure of stable personality traits.

IV. PROCEDURE

Based on the inclusion criteria, a total of 31 female college students were selected as participants for the study. Informed consent was obtained from each participant after explaining the purpose and nature of the research. Rapport was established, and participants were assured that their responses would remain confidential and used solely for academic purposes.

The procedure began with the administration of the **Face Recognition Subtest** from the **Wechsler Memory Scale – Third Edition (WMS-III)**. In accordance with the standardized WMS-III protocol, participants were first shown a set of unfamiliar human faces (the learning phase). After a brief interval, they were shown a larger set of faces which included both the previously shown faces and new distractor faces. Participants were then asked to identify which faces they recognized by responding via a structured **Google Form** prepared for the recognition task.

Following the completion of the face recognition task, participants were given the **NEO Five-Factor Inventory (NEO-FFI)**. The questionnaire was distributed in digital format, and participants were asked to respond honestly to all 60 items, rating themselves on a 5-point Likert scale. Adequate time was given to complete both assessments.

After the data collection process, responses were scored according to the standardized norms for each tool. The data were then entered and statistically analyzed using the **Jamovi.** Finally,

the results were interpreted and discussed in light of the objectives and existing literature.

V. STATISTICAL ANALYSIS

Descriptive statistics - Mean, SD, Skewness, Kurtosis, Shapiro-Wilk for normality were calculated to summarize participant responses on both the test. Pearson's product-moment correlation was performed to explore the relationship between face recognition performance and the Big Five personality traits—Extraversion, Neuroticism, Openness, Agreeableness, and Conscientiousness. Results were interpreted at two tail level of significance.

VI. RESULT

			Skewness		Kurtosis		Shapiro-Wilk	
	Mean	SD	Skewness	SE	Kurtosis	SE	W	p
N	25.3	6.16	-0.2196	0.421	-0.277	0.821	0.978	0.763
E	26.5	6.96	-0.4244	0.421	0.197	0.821	0.956	0.233
O	24.7	4.84	0.8261	0.421	1.678	0.821	0.918	0.021
A	26.0	5.55	-0.0974	0.421	-0.698	0.821	0.970	0.523
C	30.5	5.78	0.1314	0.421	-1.189	0.821	0.947	0.131
FACES_TOTSCORE	35.6	7.32	-0.5122	0.421	-0.381	0.821	0.960	0.292

Table 1

From Table 1, we found the mean score for face recognition was 35.6 (SD = 7.32). Among personality traits, Conscientiousness showed the highest mean (M = 30.5, SD = 5.78), followed by Extraversion (M = 26.5, SD = 6.96), and Agreeableness (M = 26.0, SD = 5.55). Neuroticism and Openness had lower means of 25.3 and 24.7, respectively. Normality of the data was assessed using Shapiro-Wilk tests. All variables, except for Openness, showed no significant deviation from normality ($p > .05$). Openness (W = 0.918, $p = .021$) violated the assumption of normality, indicating a moderately positive skew (Skewness = 0.8261) and leptokurtic distribution (Kurtosis = 1.678).

	E	N	O	A	C
E	—				
N	-0.369*	—			
O	-0.042	0.031	—		
A	0.497**	-0.050	0.132	—	
C	0.210	-0.134	0.125	0.378*	—
FACES_TOTSCORE	0.267	-0.244	0.148	0.257	-0.052

Note. * p < .05, ** p < .01, *** p < .001

Table 2

Results from Table 2 correlation suggest that there is no significant relationship between face recognition ability and the Big Five personality traits among the sample of 31 female college students. While slight positive correlations were noted for Extraversion, Neuroticism, and Agreeableness, these trends were not statistically meaningful.

VII. DISCUSSION

The results suggest that there is **no significant relationship** between face recognition ability and the Big Five personality traits among the sample of 31 female college students. While slight positive correlations were noted for Extraversion, Neuroticism, and Agreeableness, these trends were not statistically meaningful. Previous studies have suggested that **Extraversion**, due to its association with sociability and attentiveness to social cues, may enhance performance in facial recognition tasks (Li et al., 2010). However, the lack of a significant relationship in this study could be attributed to the **limited sample size**, **gender homogeneity**, or **moderate variation** in personality scores. Moreover, the low and near-zero correlation for **Conscientiousness** aligns with prior findings that this trait, being more task-oriented and discipline-focused, does not inherently facilitate perceptual or memory-based recognition tasks (Noftle & Robins, 2007).

VIII. CONCLUSION.

The present study aimed to explore the relationship between face recognition ability and the Big Five personality traits among female college students. While descriptive statistics revealed moderate variability in both personality traits and face recognition scores, the correlation analysis indicated no significant associations between any of the Big Five traits and performance on the face recognition task.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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